

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2000			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY					
COST (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total PE Cost		29.478	26.581	5.635	8.579	6.426	5.893	0.000	0.000	393.115
Advanced Surface Machinery/S1314		29.478	24.592	5.635	8.579	6.426	5.893	0.000	0.000	391.126
Naval Ship Survivability/32761		0.000	1.989	0.000	0.000	0.000	0.000	0.000	0.000	1.989
Quantity of RDT&E Articles										
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Advanced Surface Machinery (ASM) Programs develop affordable advanced machinery and subsystems for surface ship propulsion, electric and auxiliary requirements.</p> <p>Project S1314, the ICR Gas Turbine Engine program, is a marine propulsion gas turbine. ICR will reduce life cycle fuel cost and provide an alternate prime mover candidate. A contract for ICR Advanced Development (AD) with an option for Full Scale Development was awarded to Westinghouse Electric Corporation in December 1991. The ICR is derived from the Rolls-Royce RB211 aircraft engine and through the introduction of an intercooler, recuperator, and variable area nozzles achieves approximately a 25% to 27% propulsion annual fuel savings when compared to the LM2500 on a mechanical drive ship.</p> <p>(U) Project 32761 - The funding will be used to demonstrate advanced open system architectures and controls to further improve electrical power reliability to mission critical loads and further reduce platform costs.</p>										

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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA4		R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY	
B. PROGRAM CHANGE:			
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
FY 2000 President's Budget:	24.344	17.727	3.664
Appropriated Value:	24.344	17.727	
Adjustment to FY 1999/2000 Appropriated Value/	<u>5.134</u>	<u>8.854</u>	<u>1.971</u>
FY 2001 PRES Budget Submit:	29.478	26.581	5.635
FY 1999 Adjustments: Restructure/Adjustment and +3.999M for ICR development testing and 1.135M for various adjustments.			
FY 2000 Adjustments: +7.000M for ICR Cost Improvement Program. +1.989M for Naval Ship Survivability Program and -0.135M Across the Board reduction.			
FY 2001 Adjustment s: +1.971M for various adjustments.			
Schedule: ICR - No change. IPS program transitioned to P.E. 0603513N/Project 32471 in FY 2000.			
Technical: IPS program transitions to P.E. 0603513N/Project 32471 in FY 2000. In FY 2000, the ICR program will transition the qualification portion of program to Allied countries for completion.			

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EXHIBIT R-2a, RDT&E Project Justification						DATE:			
						February 2000			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4	ADVANCED SURFACE MACHINERY/PE 0603573N			ICR-Gas Turbine Engine/S1314					
COST (\$ in Millions)	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	29.478	24.592	5.635	8.579	6.426	5.893	0.000	0.000	391.126
RDT&E Articles Qty									
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The ICR Gas Turbine Engine is a marine propulsion gas turbine. ICR will reduce life cycle fuel cost and provide an alternate prime mover candidate. A contract for ICR Advanced Development (AD) with an option for Full Scale Development was awarded to Westinghouse Electric Corporation in December 1991. The ICR is derived from the Rolls-Royce RB211 aircraft engine and through the introduction of an intercooler, recuperator, and variable area nozzles achieves approximately a 25% to 27% propulsion annual fuel savings when compared to the LM2500 on a mechanical drive ship.</p> <p>(U) ICR full scale system development testing began in July 1994 and completed at Pyestock, U. K. on 30 April1999. Recuperator recovery efforts are continuing following the failure in January 1995 of the initial recuperator. An Engineering Development Model (EDM) recuperator, which is the exhaust heat recovery unit that provides most of the fuel efficiency gains, was delivered to the test site in January 1995. Testing on this EDM has met expectations. System testing to date has completed over 1400 hours of successful testing including over 1150 hours with the second generation recuperator and 175 hours with the EDM recuperator. Tests to date have met objectives.</p> <p>(U) A Cooperative Agreement between the United Kingdom (U.K.) and United States governments was signed by USD(A&T) on 21 June 1994 and revised in March 1997 for in-kind and cash contributions to the ICR program. A Cooperative Agreement between the French and United States governments was signed by ASN(RD&A) on 30 August 1995 for in-kind and cash contributions to the ICR program.</p> <p>(U) The FY 1999 funds for Integrated Power Systems (IPS) were budgeted and executed under P. E. 0603573N/Project S1314. IPS funding has transitioned to P. E. 0603513N/Project 32471 for both budget and execution in FY 2000 and out.</p>									

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Exhibit R-2a, RDT&E Project Justification

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EXHIBIT R-2a, RDT&E Project Justification						DATE:																			
						February 2000																			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER																				
RDT&E,N/BA-4		ADVANCED SURFACE MACHINERY/PE 0603573N			ICR-GAS TURBINE ENGINE/S1314																				
<p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 1999 ACCOMPLISHMENTS: (U) (\$29.478) ICR: Completed the manufacture and delivered the EDM recuperator. Installed the recuperator at the Royal Navy test facility in Pyestock and performed the last development test at Pyestock. Initiated the last development test at NAVSSES, Philadelphia. This test has been renamed "The Navy Five Hundred Hour Test" (NFHT). The test site was configured for ICR testing. The engine,recuperator, enclosure and all ancillary hardware were delivered to the site, assembled and installed. Modification of the Memoranda of Understanding with the U.K. and France was prepared. This modification implements the "Essential Program".</p> <p>2. (U) FY 2000 PLAN: (U) (\$23.981) ICR: The development test at NAVSSES, Philadelphia will complete. A final development Design Review called DR5 will be conducted. Following this design review, the development portion of the "Essential Program" will be complete. At that time, the joint U.S./U.K. and U.S./France programs will be transitioned to U.K./France for management of the qualification program.</p> <p>(U) (\$0.611) ICR: Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.</p> <p>3. (U) FY 2001 PLAN: (U) (\$5.635) ICR: The Royal and French navies will be performing the 3150 hour endurance qualification test, which will require eighteen months. U.S. Navy responsibilities will include participation in the Steering Committee, technical review, monitoring tests and accepting test results for compliance to U.S. Navy requirements.</p> <p>B. (U) OTHER PROGRAM FUNDING SUMMARY: N/A</p> <table border="1"> <thead> <tr> <th>FY1999</th> <th>FY2000</th> <th>FY2001</th> <th>FY2002</th> <th>FY2003</th> <th>FY2004</th> <th>FY2005</th> <th>TO COMPLETE</th> <th>TOTAL COST</th> </tr> </thead> <tbody> <tr> <td colspan="9"> </td> </tr> </tbody> </table> <p>C. (U) ACQUISTION STRATEGY: ICR is a candidate system for DD-21.</p>								FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	TO COMPLETE	TOTAL COST									
FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	TO COMPLETE	TOTAL COST																	

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NAME AND NUMBER ADVANCED SURFACE MACHINERY/0603573N	PROJECT NAME AND NUMBER ICR-Gas Turbine Engine/S1314

D. Schedule Profile:

ICR ESSENTIAL PROGRAM

ICR	O	N	D	J	F	M	A	M	J	J	A	S
Design Reviews												
Recuperator Hardware Delivery												
Testing Pyestock NAVSSES												

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2000		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA4			0603573N			ADVANCED SURFACE MACHINERY/S1314						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	NG, Sunnyvale, CA	296.759	25.663	Oct 98	12.342	Oct 99	3.885	Oct 00	4.658	343.307	
Ancillary Hardware Development												
Systems Engineering	C/CPAF	Other Contractor	0.208	0.050	Oct 98	0.200	Oct 99	0.050	Oct 00	0.250	0.758	
Licenses												
Tooling												
Cost Improvement						7.000					7.000	
Award Fees	CC/AF	NG, Sunnyvale, CA	6.375	0.000	08/99	1.224	04/00	0.000		0.000	7.599	
Subtotal Product Development			303.342	25.713		20.766		3.935		4.908	358.664	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support												
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2000		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			0603573N			ADVANCED SURFACE MACHINERY/S1314						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Philadelphia, MD	7.185	3.765	Oct 98	3.826	Oct 99	1.700	Oct 00	15.990	32.466	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			7.185	3.765		3.826		1.700		15.990	32.466	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management												
Remarks:												
Total Cost			310.527	29.478		24.592		5.635		20.898	391.130	
Remarks:												

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